

WHAT IS CLAIMED IS:

1. A variable gain amplification circuit comprising:

a signal generator that has an output terminal and is able to vary an output amplitude;

a variable capacitor connected between the output terminal and an AC grounded terminal; and

a control circuit for controlling the output amplitude of the signal generator, and a capacitance of the variable capacitor.

2. A variable gain amplification circuit as defined in Claim 1, wherein said signal generator has a variable resistor at an output load part.

3. A variable gain amplification circuit as defined in Claim 1, wherein said signal generator has a variable inductor at an output load part.

4. A variable gain amplification circuit as defined in any of Claims 1 to 3, wherein said signal generator comprises:

a variable gain mixer having a first input terminal and a second input terminal;

an RF signal source connected to the first input terminal of the variable gain mixer; and

an LO signal source connected to the second input terminal of the variable gain mixer.

5. A variable gain amplification circuit as defined in any of Claims 1 to 3, wherein said signal generator comprises:

a variable gain amplifier having a first input terminal; and
an RF signal source connected to the first input terminal of the variable gain amplifier.

6. A variable gain amplification circuit as defined in Claim 4, wherein said variable gain mixer is a single balanced mixer or a double balanced mixer.

7. A variable gain amplification circuit as defined in Claim 5, wherein said variable gain amplifier is a source grounded amplifier.

8. A variable gain amplification circuit as defined in Claim 1, wherein

said variable capacitor is constituted by a circuit comprising at least two capacitors placed in parallel between the first terminal and the second terminal, and at least one switch connected to an end of one of said at least two capacitors; and
the capacitance between the first terminal and the second terminal is varied by ON/OFF of said at least one switch.

9. A variable gain amplification circuit as defined in Claim 1,

wherein

said variable capacitor has a capacitor and a MOS device whose gate terminal is connected to the capacitor, between a third terminal and a fourth terminal; and

the capacitance between the third terminal and the fourth terminal is varied by a bias voltage supplied to the gate terminal of the MOS device.

10. A variable gain amplification circuit as defined in Claim 2, wherein

said variable resistor is constituted by a circuit comprising at least two resistors placed in parallel between the first terminal and the second terminal, and at least one switch connected to an end of one of said at least two resistors; and

the resistance between the first terminal and the second terminal is varied by ON/OFF of said at least one switch.

11. A variable gain amplification circuit as defined in Claim 3, wherein

said variable inductor is constituted by a circuit comprising at least two inductors placed in parallel between the first terminal and the second terminal, and at least one switch connected to an end of one of said at least two inductors; and

the inductance between the first terminal and the second terminal is varied by ON/OFF of said at least one switch.

12. A variable gain amplification circuit as defined in any of Claims 1 to 11, wherein said control circuit controls the variable capacitor so that the cutoff frequency or resonance frequency of the signal generator becomes constant.

13. A variable gain amplification circuit as defined in Claim 4 or 5, wherein said RF signal source has a signal band equal to or larger than 100MHz.

14. A variable gain amplification circuit as defined in Claim 4, wherein said variable gain mixer is a down conversion mixer.